<u>REMARKS</u>

This is filed in connection with a Request of Continued Examination filed this same day herewith. The remarks that follow address points raised in the Advisory Action mailed August 21, 2007, and the Final Office mailed April 18, 2007, rejecting claims 1 – 63 under 35 U.S.C. § 103. In view of the amendments above and the remarks that follow, the Applicants submit that all pending claims are in condition for allowance. New claims 64 – 66 are added.

I.   <u>Oath/Declaration</u>

This application is a continuation of United States Patent Application Serial Number 10/449,732, filed May 30, 2003, entitled "Virtual Processor Methods and Apparatus with Unified Event Notification and Consumer-Producer Memory Operations." A copy of a freshly executed Declaration properly claiming this benefit is attached hereto.

II.   <u>Withdrawal of 35 U.S.C. § 112 Rejection</u>

Applicants acknowledge the Advisory Action's withdrawal of the rejection of claims 36, 48 and 62 under 35 U.S.C. § 112, second paragraph, with thanks.

III.   <u>Rejection of Claims 1 – 63 Under 35 U.S.C. § 103</u>

Claims 1 – 63 stand rejected as allegedly unpatentable under 35 U.S.C. § 103. For the reasons previously presented by Applicants, the subject matter of these claims is both novel and non-obvious over, *inter alia*, Brown, III et al, US Patent 6,240,508 ("Brown") and Jagannathan et al, US Patent 5,692,193("Jagannathan"). In this regard, the Applicants incorporate by reference their arguments presented in their Response to Final Office Action filed August 13, 2007.

The Advisory Action purports to address the previously presented arguments, however, the Action again cites the same passage of Jagannathan (i.e., col. 25, lines 22 – 26), arguing that it "teaches delivering events by interrupting the thread and adding elements to the stack…Execution of instructions resumes after the event is delivered." *See* Advisory Action mailed August 21, 2007, page 2, ¶ 2. Contrary to the Examiner's assertions, Jagannathan still

fails to teach or suggest delivering events without execution of instructions by the processing units.

The sentence of Jagannathan relied on in the Advisory Action provides that "[s]ending a thread a signal is equivalent to interrupting the thread and pushing a continuation containing the signal handler and its arguments onto the thread's stack, and resuming the thread which causes the signal handier to be executed." *See* Jagannathan, col. 25, lines 22 – 26. However, the surrounding text shows that in order to effect delivery of exceptions, the reference necessarily requires execution of processor instructions. Jagannathan clearly details the operation of the exception dispatcher, even going so far as to include pseudo-code for the dispatcher.

```
1:        (define (exception-dispatcher type . args)

2:              (save-current-continuation)

3:              (let ((target handler (get-target&handler type args)))

4:                    (cond ((eq? target (current-thread))

5:                          (apply handler args))

6:                    (else

7:                          (signal target handler args)

8:                          (case ((exception-priority type))

9:                              ((continue) (return))

10:                             ((immediate) (switch-to-thread target))

11:                             ((reschedule) (yield-processsor)))))))
```

Jagannathan, at col 24, line 24, to col 25, line 29 (emphasis added).

The specification of Jagannathan, moreover, details the purpose of each line of pseudo-code, reciting, for example, that in line 7 "... the [exception] dispatcher sends the exception to the target thread (line 7). Sending a thread a signal is <u>equivalent</u> to interrupting the thread and pushing ... the signal handler ... onto the thread's stack, and resuming the thread <u>which causes the signal handler to be executed</u>." *See,* Jagannathan, col 25, lines 22 – 26. Therefore, dispatching an exception to a thread necessarily includes sending the signal handler, and <u>executing</u> that signal handler (i.e., executing processor instructions).

The Advisory Action incorrectly states that "execution of instructions resumes after the event is delivered." *See* Advisory Action mailed August 21, 2007, page 2, ¶ 2. To the contrary, the signal handler is an integral aspect of exception delivery in that publication — e.g., as discussed above, the signal handler is pushed onto the thread's stack and executed. *See* Jagannathan, col. 25, lines 22 – 26. In order to have an exception dispatcher without instruction execution according to Jagannathan, the signal handler would have to be removed, and there is no reason to believe that it would function without the signal handler. In sum, Jagannathan does not remedy the deficiencies of Brown.

Additionally, the Advisory Action incorrectly argues that because Jagannathan teaches event delivery at the "processor level, for example, by using interrupts (col. 24 lines 9 – 23; col. 25 lines 22 – 26)," that it can properly be combined with Brown. However, nothing in the passages of Jagannathan cited in the Advisory Action, or in the remainder of the record, support such an assertion.

More specifically, the cited passages of Jagannathan are directed towards the Sting operating system, e.g., "synchronous exceptions and interrupts are handled uniformly in Sting." *See* Jagannathan, col. 24, lines 9 – 10. Simply because Sting can make use of interrupts does not change the fact that Jagannathan is still directed towards the discussion of an operating system, while Brown is directed towards processor improvements in the physical hardware of a microprocessor. *See* Brown, col. 14, lines 1 – 17 and col. 7, lines 24 – 48. In other words, while an operating system, e.g., Sting, must run in the context of physical hardware, Jagannathan and Brown are nonetheless directed towards different architectural layers. Accordingly, those of ordinary skill in the art would not attempt to combine the features of Brown with the features of Jagannathan.

IV.   Conclusion

In light of the above, the claimed subject matter is free and clear of the art and is otherwise in condition for allowance. The Examiner is encouraged to telephone the undersigned attorney for Applicants if such communication will expedite prosecution of this application.

Respectfully submitted,

Dated: September 18, 2007   /David J. Powsner/
                                                   David J. Powsner
                                                   Registration No.: 31,868

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Attorney for Applicant

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

GENERAL PURPOSE EMBEDDED PROCESSOR

the specification of which was filed on December 12, 2003 as Application No. 10/735,610.

In the event that the filing date and/or Application No. are not entered above at the time I execute this document, and if such information is deemed necessary, I hereby authorize and request my attorneys/agent(s) at **Nutter McClennen & Fish LLP**, World Trade Center West, 155 Seaport Boulevard, Boston, Massachusetts 02210-2604, to insert above the filing date and/or Application No. of said application.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by an amendment, if any, specifically referred to herein.

I acknowledge the duty to disclose all information known to me that is material to patentability in accordance with Title 37, Code of Federal Regulations, § 1.56.

FOREIGN PRIORITY CLAIM

I hereby claim foreign priority benefits under Title 35, United States Code § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

[x] no such foreign applications have been filed

[ ] such foreign application have been filed as follows:

EARLIEST FOREIGN APPLICATION(S), IF ANY FILED WITHIN 12 MONTHS
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

Application Number	Country	Date of Filing	Priority Claimed Under 35 USC 119

ALL FOREIGN APPLICATION(S), IF ANY FILED MORE THAN 12 MONTHS
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Application Number	Country	Date of Filing

CLAIM FOR BENEFIT OF EARLIER U.S. PROVISIONAL APPLICATIONS

I hereby claim priority benefits under Title 35, United States Code §119(e), of any United States provisional patent application(s) listed below:

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[ ] such U.S. provisional application have been filed as follows:

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CLAIM FOR BENEFIT OF EARLIER U.S./PCT APPLICATION(S)

I hereby claim the benefit under Title 35, United States Code, §120 of the United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information that is material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56 which became available to me between the filing date of the prior application and the national or PCT international filing date of this application:

[ ] no such U.S./PCT applications have been filed.

[x] such U.S./PCT application have been filed as follows:

Application Number	Relationship	Parent Application	Date of Filing
This Application	Continuation of	10/449,732	May 30, 2003

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint:

All practitioners at Customer Number 021125

all of **Nutter McClennen & Fish LLP**, World Trade Center West, 155 Seaport Boulevard, Boston, Massachusetts 02210-2604, jointly, and each of them severally, my attorneys at law/patent agent(s), with full power of substitution, delegation and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the U. S. Patent and Trademark Office connected therewith.
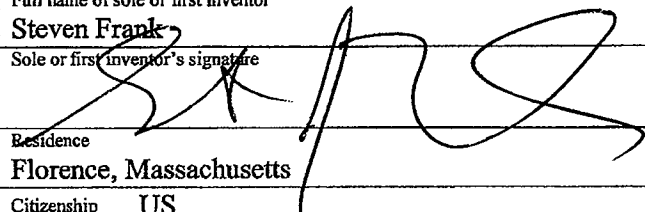
The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from Sharp Corporation as to any action to be taken in the United States Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

Please mail all correspondence to David J. Powsner at **Customer Number** 021125, whose address is:

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I hereby appoint:

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all of **Nutter McClennen & Fish LLP**, World Trade Center West, 155 Seaport Boulevard, Boston, Massachusetts 02210-2604, jointly, and each of them severally, my attorneys at law/patent agent(s), with full power of substitution, delegation and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the U. S. Patent and Trademark Office connected therewith.

The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from Sharp Corporation as to any action to be taken in the United States Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.
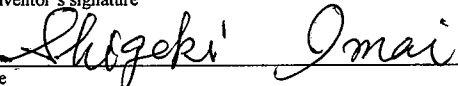
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